

I. AMENDMENT

Listing of the Claims

The following listing of the claims replaces all previous listings or versions of the claims:

1. (Withdrawn) A fusion protein comprising:
 - a) a polypeptide comprising a reporter amino acid sequence;
 - b) a second polypeptide fused to said reporter amino acid sequence; and
 - c) a leader sequence fused to a terminus of said fusion protein.
2. (Withdrawn) The fusion protein of claim 1, wherein said polypeptide is a somatostatin receptor polypeptide.
3. (Withdrawn) The fusion protein of claim 1, wherein said polypeptide is a somatostatin type 2 receptor polypeptide.
4. (Withdrawn) The fusion protein of claim 1, wherein said polypeptide is a mutant human somatostatin receptor in which all or part of the cytoplasmic tail has been deleted.
5. (Withdrawn) The fusion protein of claim 4, wherein said polypeptide is a mutant human somatostatin receptor in which the portion of the cytoplasmic tail C-terminal to amino acid 314 has been deleted.
6. (Withdrawn) The fusion protein of claim 1, wherein said second polypeptide is a protein fusion tag.
7. (Withdrawn) The fusion protein of claim 6, wherein said second polypeptide is hemagglutinin A.

8. (Withdrawn) The polypeptide of claim 1, wherein said leader sequence is the Ig κ leader sequence.

9. (Withdrawn) The polypeptide of claim 3, wherein said leader sequence is the Ig κ leader sequence.

10. (Currently Amended) An isolated nucleic acid encoding ~~the fusion protein of claim 1-a somatostatin receptor (SSTR) amino acid sequence, wherein the encoded SSTR amino acid sequence comprises a carboxy terminal truncation, and wherein said carboxy terminal truncation results in alteration of internalization and/or signaling of said SSTR amino acid sequence into a cell.~~

11. (Original) An expression vector comprising the nucleic acid of claim 10, operably linked to a promoter.

12. (Original) A host cell transformed with the vector of claim 11.

13. (Currently Amended) ~~The A~~ isolated nucleic acid ~~encoding the fusion protein of claim 6~~ 10, wherein the nucleic acid encodes a protein tag fused to the N-terminal end or C-terminal end of said SSTR amino acid sequence.

14. (Original) An expression vector comprising the nucleic acid of claim 13, operably linked to a promoter.

15. (Original) A host cell transformed with the vector of claim 14.

16. (Currently Amended) A method of assaying for the detecting cellular expression of a fusion protein recombinant seven transmembrane G-protein associated receptor in a subject comprising:

- a) transferring a gene introducing a nucleic acid encoding a recombinant seven transmembrane G-protein associated receptor into a host cell of the subject with an expression vector according to claim 10; and
- b) assaying detecting cellular expression of a recombinant seven transmembrane G-protein associated receptor based upon the chemical, physical or biological properties of said fusion protein recombinant seven transmembrane G-protein associated receptor.

17. (Canceled).

18. (Currently Amended) The method of claim 16, wherein the expression of said recombinant seven transmembrane G-protein associated receptor vector is detected assayed by contacting said host cell with a ligand that binds with specificity to said recombinant seven transmembrane G-protein associated receptor a somatostatin receptor, or mutated somatostatin receptor, and wherein said ligand has been detectably labeled.

19. (Currently Amended) The method of claim 16 18, wherein the expression of said recombinant seven transmembrane G-protein associated receptor vector is assayed by contacting said host cell with a ligand that binds with specificity to a recombinant somatostatin receptor (SSTR), a somatostatin type 2 receptor, or mutated somatostatin type 2 receptor, and wherein said ligand has been detectably labeled.

20. (Currently Amended) The method of claim 18 19, wherein said ligand is radioactively labeled somatostatin analog.

21. (Currently Amended) The method of claim ~~18~~ 20, wherein said ligand is radioactively labeled octreotide.

22. (Currently Amended) The method of claim 16, wherein the expression of said recombinant seven transmembrane G-protein associated receptor vector is detected assayed by contacting the cell with an antibody, antibody fragment, or small molecule that binds with specificity to said recombinant seven transmembrane G-protein associated receptor fusion protein.

23. (Currently Amended) The method of claim ~~20~~ 38, wherein said antibody, antibody fragment, or small molecule binds with specificity to said protein tag hemagglutinin A.

24. (Currently Amended) The method of claim ~~16~~ 39, wherein the expression of said recombinant seven transmembrane G-protein associated receptor vector is detected by assayed based upon the enzymatic activity of said fusion protein tag.

25. (Original) The method of claim 24, wherein said enzymatic activity is chloramphenicol acetyl transferase activity.

26. (Withdrawn) A DNA construct comprising segments encoding:

- a) a reporter protein; and
- b) a second polypeptide fused to said receptor, wherein said second polypeptide provides a tag for independently quantitating the expression of said fusion protein.

27. (Withdrawn) The DNA construct of claim 26, wherein said reporter protein is a receptor.

28. (Withdrawn) The DNA construct of claim 26, further comprising: a leader sequence fused to either said reporter or said second polypeptide.

29. (Withdrawn) The DNA construct of claim 27, wherein said receptor is a somatostatin type 2 receptor or the somatostatin type 2 receptor in which one or more mutations have been introduced.

30. (Withdrawn) The DNA construct of any one of claim 28, wherein said second polypeptide is tag.

31. (Withdrawn) A method of assaying the ability of a mutated receptor to bind a ligand comprising:

- a) transfected a cell with the DNA construct of claim 28 wherein said DNA construct encodes said mutated receptor or other reporter;
- b) quantitating expression of the fusion protein by assaying a signal derived from a reporter or a detectably labeled ligand to said receptor or other reporter; and
- c) normalizing the value determined in step b) by quantitating expression of the fusion protein encoded by said DNA construct using said second polypeptide.

32. (Withdrawn) The method of claim 31, wherein said mutated receptor is the somatostatin type 2 receptor in which one or more mutations have been introduced.

33. (Withdrawn) The method of claim 31, wherein the second polypeptide in said DNA construct is a tag.

34. (Withdrawn) An imaging method comprising detecting the expression of somatostatin fusion protein *in vivo*.

35. (Withdrawn) The method of claim 34, wherein the somatostatin fusion protein comprises a carboxy terminal mutation.

36. (Withdrawn) The method of claim 35, wherein the carboxy terminal mutation comprises the deletion of amino acids beyond amino acid 314.

37. (New) The isolated nucleic acid of claim 10, wherein the nucleic acid encoding the SSTR amino acid sequence further comprises a heterologous leader sequence to guide the recombinant SSTR amino acid sequence to a particular subcellular location.

38. (New) The method of claim 22, wherein said recombinant seven transmembrane G-protein associated receptor further comprises a protein tag fused to the N-terminal end or C-terminal end of said recombinant seven transmembrane G-protein associated receptor.

39. (New) The method of claim 38, wherein said protein tag has enzymatic activity.

40. (New) The method of claim 38, wherein the protein tag is selected from the group consisting of hemagglutinin A, beta-galactosidase, thymidine kinase, transferrin, myc-tag, VP16, (His)₆-tag, or chloramphenicol acetyl transferase.

41. (New) The method of claim 18, wherein said ligand has been detectably labeled.

42. (New) The method of claim 16, wherein the recombinant seven transmembrane G-protein associated receptor is a truncation mutant.

43. (New) The method of claim 42, wherein the recombinant seven transmembrane G-protein associated receptor comprises a carboxy terminal truncation of said recombinant seven transmembrane G-protein associated receptor, wherein said carboxy terminal truncation alters

internalization and/or signaling of said recombinant seven transmembrane G-protein associated receptor into a cell.

44. (New) The method of claim 43, wherein the recombinant seven transmembrane G-protein associated receptor is a recombinant somatostatin receptor, a somatostatin type 2 receptor, or mutated somatostatin type 2 receptor.

45. (New) The method of claim 44, wherein the recombinant SSTR further comprises a protein tag fused to the N-terminal end or C-terminal end of said recombinant seven transmembrane G-protein associated receptor.

46. (New) The method of claim 45, wherein the protein tag is selected from the group consisting of hemagglutinin A, beta-galactosidase, thymidine kinase, transferrin, myc-tag, VP16, (His)₆-tag, or chloramphenicol acetyl transferase.

47. (New) The method of claim 45, further comprising detecting the protein tag.

48. (New) The method of claim 16, wherein the nucleic acid is comprised in an expression vector.

49. (New) The method of claim 48, wherein the vector a nucleic acid, a plasmid, a viral particle, a virus, or a prokaryotic or eukaryotic cell.

50. (New) The method of claim 49, wherein a virus is an adenovirus, baculovirus, parvovirus, herpesvirus, poxvirus, adeno-associated virus, semiliki forest virus, vaccinia virus, Sindbis virus, lentivirus, or retrovirus.

51. (New) The method of claim 50, wherein the virus is an adenovirus.

52. (New) The method of claim 16, wherein the nucleic acid encoding the recombinant seven transmembrane G-protein associated receptor is operatively linked to an inducible, a repressible, or a constitutive promoter.

53. (New) The method of claim 52, wherein the promoter is a constitutively active promoter.

54. (New) The method of claim 16, wherein the recombinant seven transmembrane G-protein associated receptor is a recombinant somatostatin receptor, wherein said recombinant somatostatin receptor comprises a carboxy terminal truncation of said recombinant somatostatin receptor, wherein said carboxy terminal truncation alters internalization and/or signaling of said recombinant seven transmembrane G-protein associated receptor into a cell, and wherein said recombinant somatostatin receptor further comprises a heterologous leader sequence at the N-terminus or C-terminus of said recombinant somatostatin receptor.

55. (New) A method of detecting a recombinant seven transmembrane G-protein associated receptor in a cell comprising:

a) introducing the cell to a nucleic acid encoding a recombinant seven transmembrane G-protein associated receptor amino acid sequence, wherein the encoded recombinant seven transmembrane G-protein associated receptor amino acid sequence comprises a carboxy terminal truncation or N-terminal truncation, and

b) detecting cellular expression of said recombinant seven transmembrane G-protein associated receptor amino acid sequence using a ligand that binds with specificity to the recombinant seven transmembrane G-protein associated receptor amino acid sequence.

56. (New) The method of claim 55, wherein said ligand has been detectably labeled.

57. (New) The method of claim 55, wherein the recombinant seven transmembrane G-protein associated receptor further comprises a protein tag fused to the N-terminal end or C-terminal end of said recombinant seven transmembrane G-protein associated receptor.

58. (New) The method of claim 57, wherein the protein tag is hemagglutinin A, beta-galactosidase, thymidine kinase, transferrin, myc-tag, VP16, (His)6-tag, or chloramphenicol acetyl transferase.

59. (New) The method of claim 55, wherein the nucleic acid encoding the recombinant seven transmembrane G-protein amino acid sequence further comprises a leader sequence to guide the recombinant seven transmembrane G-protein amino acid sequence to a particular subcellular location.

60. (New) The method of claim 59, wherein the leader sequence is a heterologous leader sequence.

61. (New) The method of claim 60, wherein the leader sequence is an Ig kappa leader sequence.

62. (New) The method of claim 55, wherein the recombinant seven transmembrane G-protein associated receptor amino acid sequence is a recombinant SSTR, a somatostatin type 2 receptor, or mutated somatostatin type 2 receptor.

63. (New) The method of claim 62, wherein the nucleic acid encoding the recombinant seven transmembrane G-protein associated receptor amino acid sequence further comprises a leader sequence to guide the recombinant seven transmembrane G-protein associated receptor amino acid sequence to a particular subcellular location.

64. (New) The method of claim 55, wherein the carboxy terminal truncation comprises a carboxy terminal truncation from amino acid 315.

65. (New) The method of claim 55, wherein detection comprises detection using MRI, CT, ultrasound, planar gamma camera imaging, SPECT, PET, other nuclear medicine-based imaging, imaging using visible light, imaging using luciferase, imaging using a fluorophore, imaging using near infrared light, or imaging using infrared light.

66. (New) The isolated nucleic acid of claim 10, wherein said isolated nucleic acid can be imaged *in vivo* using MRI, CT, ultrasound, planar gamma camera imaging, SPECT, PET, other nuclear medicine-based imaging, imaging using visible light, imaging using luciferase, imaging using a fluorophore, imaging using near infrared light, or imaging using intrared light.

67. (New) The isolated nucleic acid of claim 10, wherein the encoded SSTR amino acid sequence comprises a SSTR2A amino acid sequence, wherein the amino acids that are C-terminal to amino acid 314 of the SSTR2A protein are deleted.

68. (New) The isolated nucleic acid of claim 67, wherein the encoded SSTR2A amino acid sequence further comprises a protein tag fused to the N-terminus or C-terminus of said SSTR2A amino acid sequence.

69. (New) The isolated nucleic acid of claim 67, wherein the encoded SSTR2A amino acid sequence further comprises a heterologous leader sequence fused to the N-terminus or C-terminus of said SSTR2A amino acid sequence.

70. (New) A method of detecting cellular expression of a reporter amino acid sequence in a subject, comprising:

- a) introducing a nucleic acid sequence encoding a reporter amino acid sequence, a protein tag and/or heterologous leader sequence into a cell of the subject, wherein said leader sequence guides the reporter amino acid sequence to a particular subcellular location; and
- b) detecting cellular expression of said reporter amino acid sequence based upon the chemical, physical or biological properties of said reporter amino acid sequence.

71. (New) The method of claim 70, wherein the reporter is a recombinant seven transmembrane G-protein associated receptor amino acid sequence, a Herpes simplex virus 1 thymidine kinase amino acid sequence, a dopamine receptor amino acid sequence, or a sodium/iodide symporter amino acid sequence.

72. (New) The method of claim 70, wherein the expression of said reporter amino acid sequence is detected by contacting said cell with a ligand that binds with specificity to said reporter amino acid sequence..

73. (New) The method of claim 72, wherein said ligand is a protein, polypeptide, peptide DNA molecule, RNA molecule, small molecule or a substrate for an enzyme.

74. (New) The method of claim 72, wherein said ligand has been detectably labeled.

75. (New) The method of claim 74, wherein said ligand comprises a substance that is detectable *in vivo*.

76. (New) The method of claim 75, wherein said detecting comprises detection using nuclear medicine techniques, MRI, CT, ultrasound, or light imaging.

77. (New) The method of claim 75, wherein said substance is a gamma emitter, a positron emitter, gadolinium, iron, a microbubble contrast agent, an iodinated contrast agent, luciferase, a fluorophore, or an agent that can be imaged with near infrared or infrared light.

78. (New) The method of claim 18, wherein said ligand is further defined as a ligand capable of being labeled with a substance that can be imaged.

79. (New) The method of claim 55, wherein the encoded recombinant seven transmembrane G-protein associated receptor amino acid sequence comprises a carboxy terminal truncation.

80. (New) The method of claim 79, wherein the carboxy terminal truncation is further defined as a truncation that alters internalization and/or signaling of the recombinant seven transmembrane G-protein associated receptor amino acid sequence.

81. (New) The method of claim 79, wherein the recombinant seven transmembrane G-protein associated receptor amino acid sequence is a SSTR2A amino acid sequence, and wherein the amino acids that are C-terminal to amino acid 314 of the SSTR2A protein are deleted.

82. (New) The method of claim 81, wherein the encoded SSTR2A amino acid sequence further comprises a protein tag fused to the N-terminus or C-terminus of said SSTR2A amino acid sequence.

83. (New) The method of claim 81, wherein the encoded SSTR2A amino acid sequence further comprises a heterologous leader sequence fused to the N-terminus or C-terminus of said SSTR2A amino acid sequence.

84. (New) The method of claim 80, wherein detection comprises detection using MRI, CT, ultrasound, planar gamma camera imaging, SPECT, PET, other nuclear medicine-based imaging, imaging using visible light, imaging using luciferase, imaging using a fluorophore, imaging using near infrared light, or imaging using infrared light.

85. (New) The method of claim 53, wherein the promoter is a thymidine kinase promoter, a SV40 promoter, or a CMV promoter.